

$$y = x^2 + bx + c$$

$$y_{\max} = v \rightarrow c - \frac{b^2}{4a} \rightarrow v - \frac{b^2}{-4} \left\{ v + \frac{b^2}{4} = v \right. \\ \left. \frac{b^2}{4} = 0 \right\} \Rightarrow b = 0$$

$$f(x) = x^2 + 2x + 3 \xrightarrow{\alpha, \beta} x^2 + bx + c \rightarrow$$

$$f(x) = (x - \alpha)^2 - 2(x - \alpha) - 18 \rightarrow x^2 - 2bx - 18 = 0$$

$$x^2 - 14x + m = 0$$

$$\alpha > \frac{\alpha + \beta}{2}$$

$$\frac{\alpha + \beta}{2} < \alpha + \beta \rightarrow$$

$$\alpha > \beta$$

$$\beta > \alpha$$

$$p = r = \frac{m}{2} \rightarrow m \geq 1$$

$$\alpha > \beta > m = 0$$

$$x^2 - 4x + m - 1 = 0$$

$$\alpha - \beta = 4 \rightarrow \alpha \geq \frac{\beta + 4}{2} \rightarrow 5 \geq \frac{\beta + 4}{2} \Rightarrow \beta \leq 6$$

$$m \geq 0$$

$$5 \geq \frac{\beta + 4}{2} \Rightarrow \beta \leq 6$$

$$4 \geq \frac{\beta + 4}{2} \Rightarrow \beta \leq 4 \rightarrow \frac{m - 1}{2} \rightarrow m \geq 1$$

$$-mx^2 + 4x + m - 1 = 0$$

$$\alpha = \frac{1}{\beta} \rightarrow \frac{1 - m}{m} \geq 1 \rightarrow m \leq 0$$

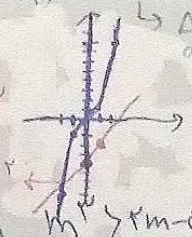
$$\alpha \neq \beta$$

$$14 - 4m(m - 1) \rightarrow 4 + m^2 - 4m \geq 0 \Rightarrow m^2 - 4m + 4 \geq 0 \Rightarrow (m - 2)^2 \geq 0$$

$$\frac{4m}{6m}$$

$$(m - 2)(m - 2) \geq 0 \Rightarrow m \geq 2$$

$$\rightarrow m \geq 2$$



$$u^T - m u^T = 0$$

$$a \beta^T = \varepsilon \} a \beta \times \beta = \varepsilon \} \beta^T \beta = \varepsilon$$

$$m = 1$$

$$\alpha + \beta = \frac{9}{\varepsilon} + \frac{\varepsilon}{4} \} \frac{r_{\max}}{12} = \frac{9}{12} = \frac{3}{4}$$

$$u^T - \varepsilon u + m = 0$$

$$\alpha + \frac{u}{\beta} \rightarrow \beta = \varepsilon \alpha \rightarrow \varepsilon \alpha = \varepsilon$$

$$m = 1$$

$$\alpha = 1, \beta = 3$$

$$\hookrightarrow \beta = m = 3$$

$$u^T - v u^T = 0$$

$$\hookrightarrow \alpha \beta = 1 \} (\beta = \frac{1}{\alpha}) \rightarrow \beta^T = \frac{1}{\alpha^T}$$

$$\alpha^T + \frac{1}{\alpha} = 0$$

$$\beta^T \rightarrow \beta^T - \beta^T \rightarrow \beta^T - \beta^T = 0$$

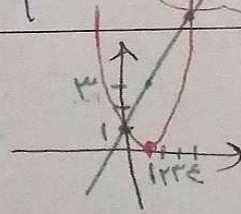
$$h(t) = -b t^2 + a t$$

$$h_{\max} \text{ of } t = ?$$

$$\text{let } (a - b) \rightarrow b = 0 \rightarrow b = a$$

$$\hookrightarrow C - \frac{b}{\varepsilon} \rightarrow 0 - \frac{b}{\varepsilon} \} \frac{1}{\varepsilon} = 4 \times 8 \text{ } h_{\max}$$

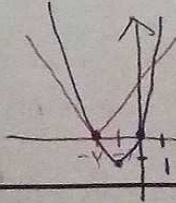
$$f(x) = (x-1)^2 = x^2 - 2x + 1$$



$$x = 0, \varepsilon$$

$$u^T - \varepsilon u = 0 \} \frac{u^T - \varepsilon u}{u^T - \varepsilon u} = 1$$

$$\rightarrow u^T + \varepsilon u = |u^T|$$



$$x = -1, 1$$